AUSTRALIAN PLANT DISEASE RECORDER

Volume 12, Number 3 July, 1960

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For confidential circulation to plant pathologists in Australia
PLEASE DO NOT ABSTRACT

COMMONWEALTH MYCOLOGICAL INSTITUTE
6 JAN 1961

CEREALS

BARLEY YELLOW DWARF VIRUS:

In a current experiment with Insignia wheat, designed to determine whether infection with barley yellow dwarf virus before or after tillering influenced the susceptibility of wheat to root-rot fungi, a surprisingly mild yellow-dwarf reaction occurred on seedling wheat plants. To check this reaction, further Insignia wheat and Algerian oat seedlings were inoculated soon after emergence. Except for reduced tillering, Insignia wheat plants inoculated on 16th June and grown in a heated glasshouse have shown little effect, whereas Algerian oats are severely dwarfed and tillering is completely suppressed. Although allowance is made for the favourable growth conditions, these results do not suggest that wheat is the most severely damaged of the three main cereal crops when inoculated in the seedling stage, as reported by Oswald & Houston (Phytopathology 43, 128-136).

Possible explanations would be:

1. Local strains of the virus are less virulent than American strains.
2. The virus is not barley yellow dwarf virus.
3. Insignia wheat is tolerant to the barley yellow dwarf virus.

In view of the severe and characteristic reaction of oat varieties to Victorian isolates of the virus, the latter explanation is considered the most feasible, particularly in view of the fact that the virus is endemic at Werribee where new wheat varieties are bred.

It is proposed to test a range of Victorian-bred wheat varieties in comparison with some American varieties.

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VEGETABLES

EXTREME RESISTANCE TO POTATO VIRUS Y IN SOLANUM SPECIES:

Clones of Solanum antipoviczii S. rybinii S. stoloniferum and S. tlaxcalense have been tested for their reactions to the Victorian strain of Potato Virus Y. Testing was carried out using a triple infection method during spring and early summer in the Virus House at the Plant Research Laboratory, Burnley.

Plants were heavily sap inoculated at the 6-8 leaf stage with a concentrated virus suspension. A range of reactions occurred following this mode of infection and 27 survivors were selected from a group of non-reactors which gave no virus Y recovery when analysed on indicators.

Aphid inoculation on a replicated basis, using Myzus persicae as vector and 15 aphids per test plant, was applied to the surviving clones. At the conclusion of three separate vector infection tests, three clones of S. stoloniferum were free of virus on indicator analysis and were symptomless during the test periods.

Irrigated approach grafts using potato and tomato scions with a high virus Y concentration were made in triplicate to each clone. This test was repeated. So far no symptoms of infection have been recorded on any of the plants and attempts to recover virus Y have been unsuccessful.

These results indicate that these clones of S. stoloniferum offer a resistance to Virus Y which approaches the extreme or immune level.

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POWDERY MILDEW OF ROCKMELON:

It has been noted previously (A.P.D.R. 11 (3), 23,1959) that the resistance of the rockmelon variety P.M.R.45 to powdery mildew (Oidium sp.) has broken down in the Murrumbidgee Irrigation Areas and the Lower Murray area of New South Wales in the autumn of 1959. At that time the varieties P.M.R.5 and P.M.R.6 were resistant to the local fungus.

In the autumn of 1960, however, a moderate to heavy infection of powdery mildew occurred in the Lower Murray area on P.M.R.45, P.M.R.5, P.M.R.6, Edisto and a number of F1 and F2 seedlings derived from P.M.R.5 and P.M.R.6.

The breakdown of the resistance of P.M.R.5 and P.M.R.6 means that no varieties are now available which can be used as a source of resistance to powdery mildew in the rockmelon breeding programme. Enquiries are being made of overseas workers concerning possible sources of resistance other than those from which the resistance of P.M.R.45, P.M.R.5 and P.M.R.6 was derived.

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EVIDENCE OF MERCURY TRANSLOCATION IN PEARS:

During the 1959-60 fruit season a spray trial for control of black spot of William's Bon Chretien pears conducted in the Goulburn Valley included a schedule of phenyl mercuric chloride sprays which was applied as follows:

Delayed green tip	(15/ 9/59)	0.01% P.M.C.
Finger	(22/ 9/59)	0.01% P.M.C.
Petal fall	(14/10/59)	0.005% P.M.C.

No additional sprays were applied.

P.T. Jenkins and D.E. Harrison (A.P.D.R. 11 (4), 1959) report that, in the 1958-59 season, Yate's apples, which received five cover sprays of 0.002% mercury (in phenyl mercuric fixtan), at harvest contained 0.08 p.p.m. mercury. This result corroborated evidence of translocation of mercury through apple tissues which overseas workers had obtained. In view of these results a sample of pears sprayed with P.M.C. as above was collected at harvest and analysed for mercury content at the State Laboratories. The results of this analysis were as follow:

	Mercury per fruit (hg) p.p.m.		Mercury per fruit (µ gm)	
	Pear	Apple	Pear	Apple
Skin	0.067	0.33	1.2	5.0
Core	0.024	0.16	0.5	2.5
Flesh	0.15	0.05	23.3	8.5
Whole fruit	0.13	0.08	25.0	15.0

These results show a different distribution pattern from the apple results with much greater concentration in the flesh of pears. The concentration of mercury in both the whole fruit and the flesh of pears is in excess of the legal tolerance of 0.1 p.p.m.

In April leaf samples were taken from the same trees as the fruits.

The leaf samples were:

1. From the base of this season's growth, showing P.M.C. spray injury (burns and chlorotic blotches).
2. From the tip of this season's growth, not showing any sign of P.M.C. spray injury.

These samples were analysed at the State Laboratory for mercury content with the following results:

Sample	Mercury p.p.m. (dry basis)
Base leaves	2.5
Tip leaves	0.5

As the tip leaves developed subsequently to the application of P.M.C. sprays, this result demonstrates that mercury is translocated to growing portions of the tree in appreciable quantities.

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BOTRYTIS ROT OF PASSIONFRUIT:

In Perth during May the rainfall was above average and temperatures were below average. It was under these conditions that grey mould (Botrytis sp.) attacked green passionfruits in a commercial planting. Quite a number of fruits were affected but the incidence was rated as low.

Symptoms consisted of obvious green water-soaked areas of 1 to 2 centimetres in diameter which in some cases centred about a hole resembling an insect puncture. A moderate growth of grey mould was found inside the fruit but in a moist jar the mould developed profusely on the affected parts of the fruit after 24 hours. The condition had not previously been observed in W.A.

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ORNAMENTALS:

SOME DISEASES OF ORNAMENTALS IN VICTORIA:

Fusarium yellows, first observed in Victoria in 1952 following the earlier New South Wales record, has now spread through the Victorian gladiolus growing areas and has been responsible for serious losses during recent years. The hot water treatment of the cormlets has given promising results with some varieties but with others, especially those which tend to produce a high percentage of cracked husks, the treatment has not been so successful.

Curvularia which was first recorded by Pearman in New South Wales on an imported gladiolus plant A.P.D.R. 10 (2), 1958 has now been found on a number of gladiolus properties in Victoria but no serious damage has yet been observed. Many of the growers are now paying more attention to their general spray programme and this could explain the limited occurrence of this disease to date.

Azaleas growing in the Dandenong Ranges last spring showed symptoms of a petal blight which agreed with the recorded description of Ovulinia azaleae, and the growth in culture appeared quite distinct from the Botrytis which has been a problem in Victoria for many years. Ovulinia was recorded in New South Wales by Pearman in November 1959 (A.P.D.R. 12(1)) but in the absence of the perfect stage there is still no definite record for Victoria.

The widespread propagation of Boronia megastigma from seed in recent years, especially by New Australians who were apparently unaware of the rust problem in Victoria in the past, has been associated with a widespread outbreak of the disease. Many of the local growers overcame the rust problem by the selection of resistant lines and this appears to be the best solution to this problem.

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HOYA CARNOSA INFECTED WITH TOMATO SPOTTED WILT VIRUS:

A disease of Hoya carnosa, which causes a rapid decline of affected plants, is caused by the tomato spotted wilt virus, and for the past five years all diseased Hoya specimens submitted for examination have been found to be infected with that virus. The virus isolates have been of a necrotic type which rarely infect Nicotiana glutinosa systemically.

Symptoms on Hoya consist of sunken black or dark purplish lesions or zoned markings, with extensive chlorosis.

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MISCELLANEOUS

LOPHODERMIUM SPECIES IN THE A.C.T.:

A subcuticular Lophodermium sp. has been found on needles of Sequoia sempervirens grown at Stockyard Creek Arboretum No. 7, and Blue Range Arboretum No. 8, in the A.C.T. The climatic conditions in Stockyard Creek are unfavourable for growing Sequoia sempervirens, but the trees grow reasonably well at Blue Range.

A subcuticular Lophodermium sp. was also collected on needles of Cupressus glabra, Widdringtonia juniperioides and W. schwarzii, at arboretum No. 8.

Sequoia sempervirens and Cupressus glabra are trees of North American, the Widdringtonia spp. of South African origin. No record of any Lophodermium sp. occurring on these tree species either in their natural environment or elsewhere could be found in the literature available.

W. STAHL

Forestry and Timber Bureau,

CANBERRA.

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LOPHODERMIUM SPECIES IN THE A.C.T.:

A subcuticular *Lophodermium* sp. has been found on needles of *Sequoia sempervirens* grown at Stockyard Creek Arboretum No 7, and Blue Range Arboretum No. 8, in the A.C.T. The climatic conditions in Stockyard Creek are unfavourable for growing *Sequoia sempervirens*, but the trees grow reasonably well at Blue Range.

A subcuticular *Lophodermium* sp. was also collected on needles of *Cupressus glabra*, *Widdringtonia juniperoides* and *W. schwarzii*, at arboretum No. 8.

Sequoia sempervirens and *Cupressus glabra* are trees of North American, the *Widdringtonia* spp. of South African origin. No record of any *Lophodermium* sp. occurring on these tree species either in their natural environment or elsewhere could be found in the literature available.

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